Sulfur Dioxide

Herculaneum CAG Meeting, July 19, 2005
Missouri Department of Health and Senior Services

Sulfur Dioxide is a colorless gas with a pungent odor. Exposure to sulfur dioxide is generally through breathing air that contains some sulfur dioxide.

Exposure to sulfur dioxide tends to affect the respiratory system, irritating the nose and lungs or making it more difficult to breathe. People with asthma are slightly more sensitive to sulfur dioxide exposure. Exposure to high concentrations (100 ppm) of sulfur dioxide over a short period of time may be life threatening. Over long periods of time (20 years), exposure to lower concentrations of sulfur dioxide (0.4-3.0 ppm) may have caused changes in lung function in some exposed workers. However, the workers were exposed to other chemicals and conditions at the same time as the sulfur dioxide, so it is not possible to definitively state that their changes in lung function were solely due to the sulfur dioxide exposure. The National Institute of Occupational Safety and Health (NIOSH) recommends that workers not be exposed to more than 2 ppm of sulfur dioxide on average during their workday, and the Occupational Safety and Health Administration requires that workers not be exposed to 5 ppm of sulfur dioxide during their workday. The National Ambient Air Quality standard for sulfur dioxide is three-tiered: a three-hour average of 0.50 ppm and /or a 24 hour average of 0.14 ppm and/or an annual average of 0.03 ppm.

The Agency for Toxic Substances and Disease Registry prepared a Health Consultation in October 2002 that examined sulfur dioxide concentrations in Herculaneum. That consult found that the air concentrations were in compliance with the NAAQS, and that although there may be short periods where sulfur dioxide concentrations were higher, any effects of those short exposures tend to be short lived and clear up once the sulfur dioxide concentrations decrease. Since 2001, the smelter has continued to remain in compliance with the NAAQS for sulfur dioxide. Sulfur dioxide concentrations have been consistently low. During the last quarter (January –March 2005), the highest measured 1-hour average was 0.28 ppm, which is less than the allowed 3-hour standard of 0.5 ppm. Although there still may be short periods where the sulfur dioxide concentration is higher, concentrations do not appear to be sufficient to cause lasting adverse health effects.